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ABSTRACT

Data from four of the Cooperative First Grade Studies (1964-1965) were reanalyzed for four first grade projects, (Fry, Hayes, Mazurkiewicz, and Tanyzer). These projects were selected because they compared the Initial Teaching Alphabet approach with traditional orthography-basal reader approaches. The focal point of this reanalysis was to study the effect of the treatment on the development of the grapho-phonemic and semantic subsystems underlying comprehension. A total of 565 subjects in 37 classes were in the ITA group and 533 subjects in 36 classes were in the basal treatment group. The data which was reanalyzed consisted of three instructional measures collected in the first month of school, four selected subtests from the Stanford Achievement Test collected after 140 days of instruction in the first grade; and three selected subtests from the Stanford Achievement Test collected at the end of second grade. Six of the eight comparisons of grapho-phonemic development revealed a significant difference in favor of ITA. Differences in underlying systems, not tested for in the First Grade Studies, apparently are not realized in reading comprehension at the end of the first grade. (MKM)

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ABSTRACT

EFFECTS OF INSTRUCTIONAL METHODS ON READING ACQUISITION SYSTEMS: A REANALYSIS OF THE FIRST GRADE STUDIES DATA

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Data from the First Grade Studies were reanalyzed by analysis of covariance to test the following hypothesis: treatment effects (instructional methods) modify underlying subsystems of grapho-phonemics and semantics, which in turn, are functionally related to comprehension. Results tended to support the hypothesis, implying that treatments or methods do make a difference in mode of reading acquisition. This implication is inconsistent with the conclusion of the First Grade Studies.

However, differences in the underlying systems, not tested for in the First Grade Studies, are not realized in reading comprehension at the end of the first grade. An explanation for treatments having effects on underlying subsystems but not on comprehension is that differences in the grapho-phonemic subsystem, influenced by grapho-phonemic regularity in orthography, such as ITA, are offset by differences in the semantic subsystem, which is stressed by meaning-emphasis programs, such as whole-word type basal readers. Further investigation is planned to test this hypothesis.

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# EFFECTS OF INSTRUCTIONAL METHODS ON READING ACQUISITION SYSTEMS: A REANALYSIS OF THE FIRST GRADE STUDIES DATA

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Learning to read requires acquisition of rules of correspondence between oral and printed language. These correspondence rules can be categorized into three subsystems: grapho-phonemic, semantic and syntactic. The question to be answered in this study, is whether treatments (instructional methods) affect the mode of acquisition of these rules. More specifically, does an instructional program, such as initial teaching alphabet (ITA), emphasizing regularity of sound-symbol relationships lead to a significant difference in the individual's subsystem development than does an instructional program, such as the whole word type basal reader with traditional orthography (TO), which has an emphasis on meaning?

The results of the Cooperative First Grade Studies (1964-1965) implied that teacher effectiveness rather than method of instruction may have been the critical variable in reading comprehension. Among the twenty-seven separate projects, four projects contrasted ITA and meaning-emphasis basal readers in both first and second grades. However, the first grade studies did not systematically test the effects of methods of instruction on grapho-phonemic and semantic subsystems underlying comprehension.

Results of the First Grade Studies indicated the comprehension criterion, which was the dependent variable, varied within

each treatment group more than between treatment groups (Hayes, 1966,1967; Mazurkiewicz, 1966, 1967). On the ITA-TO comparisons, Fry (1966, 1967) found no statistically significant differences in comprehension between groups, but Tanyzer (1966, 1967) did find significant differences between ITA and TO treatment groups. The ITA group performed significantly better than the TO group on the comprehension measure, and on all of the other Stanford Achievement Test subtests. The criterion measure used in all of the First Grade Studies was comprehension, not differences in the underlying subsystems of syntax, semantics, and grapho-phonemics as a function of instructional methods.

Recently, Barr (1975) determined that method of reading instruction did significantly influence students' grapho-phonemic strategies. Cohen (1975) concluded that method of instruction determines dimension of the stimulus the reader attends to. Gillooly (1971) suggested that in early stages of reading, phonetic writing systems (ITA) develop word recognition skills at a faster rate than do TO systems, but this subsystem advantage is not realized in comprehension. None of these investigators studied treatment effects on the development of subsystem patterns and their effect on comprehension, which is the focal point of this reanalysis of the data from the first grade studies.

## METHOD

### Subjects

Data from four first grade projects (Fry, Hayes, Mazurkiewicz and Tanyzer) were reanalyzed. These projects were selected because they used ITA and TO treatments. A total of 565 subjects in 37 classes were in the ITA group and 533 subjects in 36 classes were

in the basal treatment group.

Materials and Procedures

Three pre-instructional measures, collected in the first month of the school year, were considered indicative of knowledge already attained by pupils in subskills relevant to reading acquisition. These measures were: 1) Pintner-Cunningham Primary Test; 2) Murphy-Durrell Phoneme Test; 3) Metropolitan Word Meaning Test (Bond & Dykstra, 1966).

Selected subtests from the Stanford Achievement Test, Primary Battery I, were used as post-instructional dependent variables after 140 days of instruction in first grade. The subtests were: 1) Paragraph meaning test (comprehension); 2) Word Reading Test (grapho-phonemic I); 3) Word Study Skills Test (grapho-phonemic II); 4) Vocabulary Test (semantics). Post treatment data collected after second grade instruction were selected sub-tests from the Stanford Achievement Test, Primary Battery II: 1) Paragraph Meaning Test (comprehension); 2) Word Meaning Test (semantics); 3) Word Study Skills Test (grapho-phonemics) (Dykstra, 1967).

An analysis of covariance design was used to analyze the treatment effects on the dependent variables of comprehension, semantics and grapho-phonemics. The covariates were intelligence (Pintner-Cunningham), grapheme-phoneme relationships (Murphy-Durrell Phoneme Test), and semantics (Metropolitan Word Meaning Test).

## RESULTS

No significant differences were found in any subskill or in the total criterion measure in the Fry study at the first grade level. At the second grade level, the comprehension criterion showed no significant difference, while Word Meaning and ord Study Skills indicated a significant difference in favor of ITA.

In the Hayes study (1966,1967), no significant difference was found in the total criterion measure at either grade level, but significant differences in favor of ITA were found in measures of grapho-phonemic ability at both grade levels. The single significant difference in the Mazurkiewicz study (1966,1967) favors ITA at the first grade level on the Word Study Skills Test. Analysis of the Tanyzer study (1966,1967) revealed significant differences in favor of ITA in total comprehension as well as in the grapho-phonemic subtests at grade one and in the Word Meaning subtest at grade two.

## DISCUSSION

Six of the eight comparisons of grapho-phonemic development (Word Reading and Word Study Skills) reveal a significant difference in favor of ITA. The data thus tend to support the hypothesis that an instructional treatment with a heavy emphasis on symbol-sound correspondence creates a strenght in the grapho-phonemic subsystem of beginning readers. The lower scores for the basal treatment support the hypothesis that a word-meaning emphasis with traditional orthography method of teaching reading slows initial growth in the grapho-phonemic subsystem. These results confirm Gillooly's statement (1971) that phonetic writing systems have an advantage over TO in word recognition skills. They also are consistent with the conclusions of Barr (1975) and Cohen (1975) that method of instruction influences translation strategies adopted by the reader.

In the semantic subskill, only two of eight comparisons were significant. However, the Early-to-Read series (ITA) stresses a meaning approach which is similar to that of the basal(TO) approach, therefore, it may have influenced not only the grapho-phonemic sub-

system, but also the semantic subsystem. Hence we would not expect to find significant differences in semantic subsystem development for these ITA and TO treatments.

Six of the eight comparisons revealed no significant difference between method of instruction on comprehension. If comprehension in beginning reading is a linear weighted function of three subsystems (grapho-phonemics, syntax, and semantics), then the occurrence of a significant difference in grapho-phonemics without a concomitantly significant difference in comprehension indicates that another subsystem must be compensating. We did not find that semantic development offset graphophonemic development. However, we did find that instructional treatment was significantly related to development of the grapho-phonemic subsystem. Therefore, we have gained partial support for our hypothesis. Further investigation is planned to test our hypothesis that treatment effects modify underlying subsystems and to determine if the compensating subsystem was syntactic development.

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